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Abstract

This forth annual report covers the activities of the Research and Development Center in Educational Stimulation during the 1968-69 fiscal year. To reflect the Center's new programmatic structure, the description of the Center's objectives and activities is organized as follows: (1) Administrative program; (2) substantive programs, including art, language arts and verbal learning, mathematics, music, physical education, science, and social science; (3) developmental psychology program; (4) evaluation program; and (5) technical support program, including statistical services, publications, dissemination, and field centers. It is anticipated that this new organizational structure will increase the Center's capability to attain its primary goal of developing a system which will provide early and continuous educational stimulation through structured sequential learning activities beginning with children aged 3 years. The appendix contains a 286-item bibliography of literature related to the Center's activities. (JH)

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# FOURTH ANNUAL REPORT: RESEARCH AND DEVELOPMENT CENTER IN EDUCATIONAL STIMULATION

The University of Georgia
Athens, Georgia

to

THE UNITED STATES OFFICE OF EDUCATION

Report Number 15
July 1, 1968 to June 30, 1969

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Executive Committee of the
Local Advisory Board
Joseph A. Williams
Warren G. Findley
Stanley H. Ainsworth

Director
Eugene M. Boyce

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# THE R & D CENTERS PROGRAM

This Center is one of a system of nine Educational Research and Development Centers funded under the Cooperative Research Act (as amended by Title IV of the Elementary and Secondary Education Act of 1965). The program was organized as one response to an increased national awareness of the importance of finding solutions to critical educational problems.

More specifically, the R & D Centers program was devised to fill a unique role in relation to other forms of educational research and development, by providing a prime avenue for (a) bringing together a critical mass of interdisciplinary talent and other research resources from the behavioral sciences and other disciplines, (b) focusing on a crucial educational problem area by means of a long-range coordinated attack on large-scale problems, and (c) moving promising innovations through development toward an impact on actual educational practice. Although R & D Centers generally do not carry the innovative process through to final implementation themselves, they are charged with the responsibility for projecting a further route toward that goal by enlisting the interest of a regional educational laboratory, commercial developer, State or local agency, coordinating body, or other appropriate institution.

Although these centers have had an existence of only three to five years in which to build up their program, they have already recorded some significant steps toward the achievement hoped for, and this Annual Report describes some of the accomplishments of one of these centers. The list of all nine R & D Centers is as follows:

Learning Research and Development Center, University of Pittsburgh (1964)

Center for the Advanced Study of Educational Administration, University of Oregon (1964)

Research and Development Center for Teacher Education, University of Texas at Austin (1965)

Stanford Center for Research and Development in Teaching, Stanford University (1965)

*Wisconsin Research and Development Center for Cognitive Learning*, The University of Wisconsin (1964)

*Research and Development Center in Educational Stimulation*, University of Georgia (1965)

*Center for Research and Development in Higher Education*, University of California at Berkeley (1965)

*Center for the Study of Evaluation*, University of California at Los Angeles (1966)

*Center for the Study of Social Organization of Schools*, The Johns Hopkins University (1966)

Also funded through this same program is the *National Laboratory on Early Childhood Education*, which consists of a group of six university-based centers coordinating their research and development efforts through a National Coordination Center at the University of Illinois.

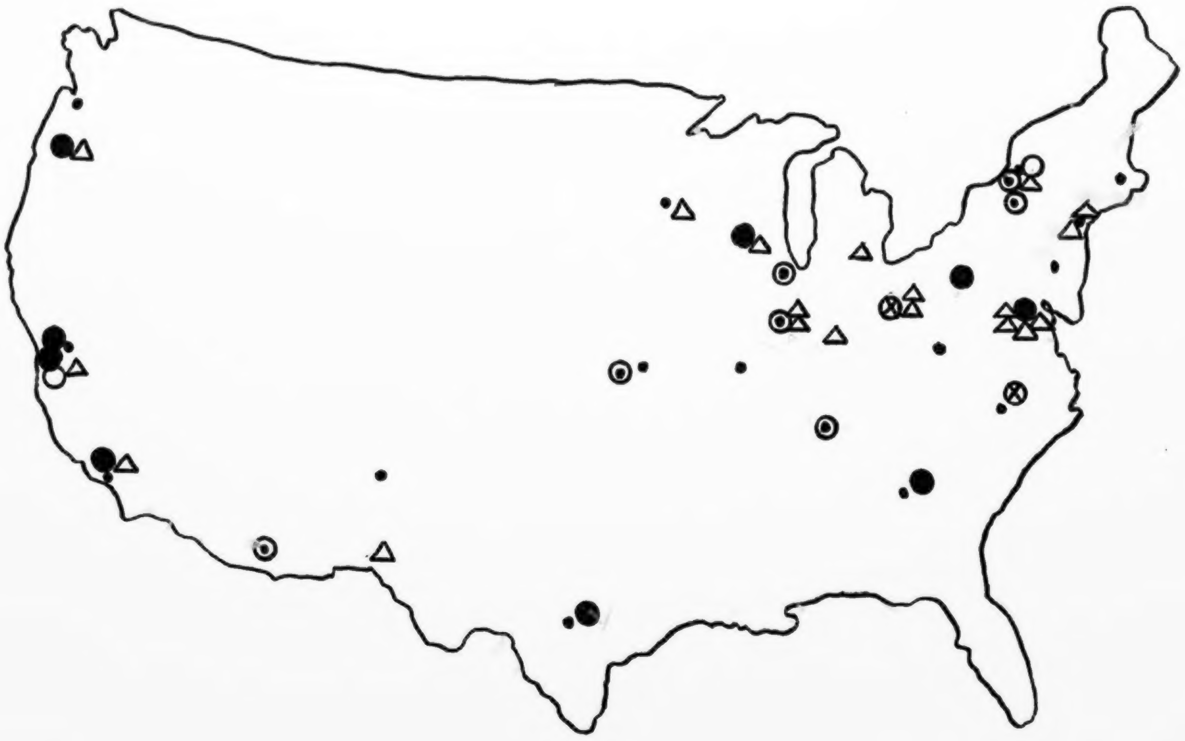
The Educational Research and Development Centers are part of a larger set of institutions which contribute in specialized ways to the improvement of educational practice. These include:

o The two *Educational Policy Research Centers*, charged with providing a continuing examination of future educational needs and resources for the years 1980-2000.

o The two *Vocational Education Research Centers*, established under the provision of the Vocation Education Act of 1963.

o The system of 15 *Regional Educational Laboratories*, each of which concentrates on specific problems concerned with the development demonstration, and dissemination of educational alternatives, materials, and practices for the schools; some of these have close relationships with the Educational Research and Development Centers.

o The *Educational Resources Information Center* (ERIC), a nationwide network for acquiring, selecting, abstracting, indexing, storing, retrieving, and disseminating information about educational research and resources, including 19 ERIC Clearinghouses each providing coverage of a particular educational area.



● Educational Research and Development Centers
⊙ National Laboratory on Early Childhood Education (6 centers plus
the National Coordination Center)
○ Educational Policy Research Centers
⊗ Vocational Education Research Centers
• Regional Educational Laboratories
△ ERIC Clearinghouses

## CONTENTS

Page

Administrative Program 1

Substantive Programs 5

Developmental Psychology 20

Evaluation 28

Technical Support 31

Follow Through 39

Historical Summary 40

Appendices 46

Index 85

## ADMINISTRATIVE PROGRAM

The period covered by the 1968-69 annual report has been characterized by a steady search for and movement toward a research and development system capable of producing in a comparatively short time a real impact on education in the United States. This system will eventually provide guidelines and specifications from which and through which subsystems and schema might evolve for the development of structured material for early, continuous educational stimulation beginning with children aged three years.

The development of an R & D system is in itself a development process. Throughout the year 1968-69, this process has been marked by a series of events and activities each of which has depended to some extent on a preceding one. Organization for decision making and for review has developed simultaneously with a program plan having a strong central focus. Prior to this year, the Center program emphasized primarily the development area with a major concentration on language arts and verbal learning. Also, emphasized was the area of applied and basic research where the projects could form a basis for future action in the development area.

July 1, 1968, saw the establishment of a framework for the organization of seven subject fields in the Center. At the same time, a program coordinator was employed to bring the efforts of the seven substantive programs into a central focus. The team of program coordinators held regular weekly meetings out of which grew two specific recommendations: first, that the work of the group be centered temporarily on the production of a set of instructional materials for the Clayton County Field Center and, second, that machinery be set up whereby evaluation and developmental psychology personnel could be more closely involved in the routine program-development process.

The materials for the Clayton County Field Center were to be developed on an a priori basis and would then be the vehicle for the review of earlier research and existing curriculum programs in the several areas. Programs and the budget were revised to meet the needs of the new emphasis on the Clayton County Field Center. The subject coordinators were to concentrate through the spring and summer of 1969 on the selection and organization of these curriculum materials. On February 1, a full-time representative of the R & D Center was located in Clayton County, and it was decided that the R & D Center should appoint a specialist in each subject area. These new specialists are to be located at the Clayton County Field Center. Clayton County school officials also agreed to house the pupils and teachers involved in the experimental program in a different and separate building in Jonesboro, Georgia, which is known as the J. W. Arnold Elementary School.

Efforts to achieve a working balance between Center objectives led to the development of a single three-dimensional plan. Within the organizational structure (Appendix Nos. I and II) this entailed the formation of a coordinating committee consisting of the Center director and three associate directors: for (1) Substantive Programs, (2) Developmental Psychology, and (3) Evaluation. The functions of this coordinating committee quickly became both policy making and operational. In fact, the group is now at the center of the decision-making process with provisions for feedback and review extending both upward and downward. It is in this group that the R & D System is being generated, and tangible results of its work are already apparent in a complete reorganization of the budget and the total fiscal system.

At the beginning of the year there were fourteen separate programs each with its own budget. By the end of the year, this had coalesced into a single budget having five parts, one for each of the three dimensions of the Center plan and additional areas for general administration and technical support. The overall scheme of the Center is evolving through the design of a management information system.

Immediately prior to the beginning of this reporting year, a study was made of the administration of the R & D Center by a team of consultants from the Center for Management Systems Development and Analysis on the University campus. They recommended the establishment of a data retrieval system and a management information system. Upon receipt of these recommendations, a statistical services section was set up without delay and charged with the responsibility of establishing a data bank for the several experimental projects of the Center. In staffing the statistical services section the Center acquired personnel knowledgeable in the area of management systems. In April, 1969, the coordinator for statistical services also assumed responsibility for the general administration program of the Center. There are plans to develop a management information system involving the total program for the Center, which will give impetus to the introduction of the R & D system referred to above.

A general programmatic emphasis has been reflected in the development of a plan for publications. At the beginning of the year, publications centered primarily around subject areas and the classifications reflected that emphasis. A revised system has been implemented in which the subject identification is no longer stressed.

The new programmatic effort is also reflected in the Follow Through program. The involvement in this program during the 1968-69 school year was considered a peripheral or extra activity of the R & D Center. Contracts have been signed for 1969-70 and revised plans have been made with the Follow Through office in Washington, D. C. The Follow Through program is now integrated into the routine activity of the Center in such a way that the overall program will be greatly strengthened and supplemented.

Currently the Center planning effort is being directed toward refinement of the research and development system that has been roughly outlined. It is expected that through the summer months the details of this system will be formulated and that, by the opening of school in the fall, the total program will be expressed in terms of the new structure and framework.

A conference with the National Advisory Panel (Appendix No. III) is scheduled for early July. The objective of this conference is to get a critical analysis of the 1968-69 activities and to utilize the expertise of the Panel in reassessing the Center's objectives.

In order to conform more closely to the operational activities of the Center, the description of programs and projects is in the process of being revised. This revision will reflect the reclassification of activities into five major programs (Appendix No. VI).

## SUBSTANTIVE PROGRAMS

The Substantive Program dimension of the Center continues to have as its major thrust the development and implementation of a structured, sequential curriculum for children, ages three - twelve. There are seven subject matter areas contained in the Substantive Program. The areas and their coordinators are as follows:

Art - Dr. Robert B. Kent
Language Arts and Verbal Learning - Dr. George E. Mason
Mathematics - Dr. William D. McKillip
Music - Dr. Gene M. Simons
Physical Education - Mr. Billy E. Gober
Science - Dr. Kenneth S. Ricker
Social Science - Dr. Everett T. Keach

"These seven programs have common relationships based on: curriculum and pedagogical developments; interaction in facilitating increments, primarily, in cognitive skills; sequencing and structuring of materials most conducive to stimulation; age-grade placements for maximum educational stimulation; and application of learning theory to instructional materials and teaching practices." (Third Annual Report of R & D Center, Georgia "Focus")

Since the fall of 1968, the subject matter coordinators have been meeting weekly to identify and analyze activities that would result in effective curriculum development and implementation in terms of these relationships. It had become evident that various subject matter components of the curriculum were not interacting in facilitating cognitive increments at junctures where such interaction could be a normal activity. One major outcome of these sessions has been an agreement to explore the possibility of developing a single total program for the field center's curriculum. In effect, the subject matter coordinators are still maintaining their separate subject matter specialties but, in addition, are implementing instructional strategies whereby it may be possible for the several subject matter areas to reinforce one another in both the content and process dimensions.

The Substantive Program dimension has established working relationships with both the Evaluation and Developmental Psychology dimensions of the Center. For example, the staff of the Substantive Program, that is, subject area coordinators and their assistants are working with the Evaluation staff in framing techniques for the formative Evaluation activities of the Center. It should also be noted that the staff of the Substantive Program is working with staff from the Developmental Psychology dimension in an attempt to identify and come to grips with persistent problems concerning the cognitive and affective development of children.

At the present time, the membership of the Substantive Program dimension is turning its attention to the framing of a five-year plan for the experimental school's curriculum. It is hoped that out of these deliberations will emerge a viable conceptualization of a unified curriculum. As the membership works toward this goal, it is becoming evident that the Substantive Program product includes more than units of study for the experimental school sample. Other products taking form at the present time include evaluation instruments, papers on skill sequences, intellectual and interest processes, and statements concerning conceptual frameworks for the various subject matter areas.

## Art

Cognizant of the importance of visual acuity, the emphasis of the Art Program is based upon the idea that structured, sequentially developed art instruction can play a major role in developing visual stimulation. It is recognized that art is not the only source of visual stimulation, but it is believed that concepts and structures which are being developed in the Art Program can easily be adapted to other curricular areas.

The objectives of the Art Program are as follows: (1) to develop a structure for the teaching of art which the untrained teacher will be able to use in the classroom; and (2) to develop perceptual skills in young children by sensitizing them to their environment. The Art Program concentrates on a process of communication with the children within their environment rather than emphasizing the production of countless "finished" art products.

During the period under review (1968-69), an art curriculum for five- and six-year-olds was outlined and pilot tested with classes in the Oconee County School System. One additional product from that project was a dissertation completed by Marvin Grossman entitled, Developing Aesthetic and Creative Visual Abilities in Kindergarten Children through a Structured Developmental Art Program.

During the 1968-69 school year, the procedures incorporated in the previously mentioned developmental Art Program were tested with three- and four-year-olds to assess the viability of the materials with the younger age group. The materials were tried with a sample of children at the West Broad School in Athens, Georgia. It was found that many of the materials designed for five-year-olds were suitable for the four-year-old child with minor modifications in teaching strategy. The materials proved unsatisfactory for the three-year-olds, and a new approach is being considered for this age group.

An Art Appreciation Study for elementary school children was initiated with the writing of selected materials which were pilot tested in the Oconee County School System during 1968-69. This program will consist of: (1) enrichment lesson plans for the teacher, and (2) lesson plans which employ a discovery method for the teacher's use with the pupils. Two sets of lesson plans will be provided for each art lesson. One set will be carefully structured for concept ideas and background information for the teacher's use. The other set of plans will consist of the delineation of teaching strategies for the lessons. Correlated with these lesson plans will be twenty art reproductions used to teach students how to make personal visual discriminations concerning works of art.

## Language Arts and Verbal Learning

Major activities of the Language Arts and Verbal Learning Program during the year 1968-69 include (1) revision and improvement of curriculum developed during past years, (2) implementation of the revised curriculum in the various field centers and Follow Through programs, (3) trial and modification of commercially prepared materials at the four-, five-, and six-year-old levels, and (4) numerous studies in the Language Arts and Verbal Learning area.

The Language Arts and Verbal Learning Program has three integral parts: writing, reading, and oral language. While each of these parts stems from a separate and distinct curriculum development effort, it should be noted that in the implementation, they serve to reinforce one another.

These instructional parts are regarded as being essentially tools for use by a teacher. The Language Arts and Verbal Learning Program now under development at the R & D Center consists of sets of specific behavioral goals in terms of the children's behavior to be elicited by the teacher. These behavioral goals serve to focus the teacher's attention upon what the child does and does not do rather than upon what he does or does not know. The programs furnished to the teachers do and will continue to consist of listed goals and suggested procedures for achieving these goals on a daily basis. As children increase in proficiency and the gaps between individual performances become wider, the goals will be stated in more general terms and the lessons prescribed for teachers will be fewer in number--many will take the form of examples rather than exact lesson specifications.

Progress in developing a Language Arts curriculum has led to the outline of a new and more complete curriculum, in which reading and writing units are alternated. During the school year 1968-69 the Merrill Linguistic Reading Program was tested with four-, five-, and six-year-olds at the Clayton County Field Center. Extensive modifications were made in this program leading subsequently to the new curriculum outline. This new outline reflects a more programmatic effort in that the previously segmented units for reading, writing, and oral language are now combined to provide a unified curriculum. Knowledge obtained through other Language Arts studies conducted by specialists in the Reading Clinic at the University of Georgia also contributed to the construction of the Language Arts curriculum.

A research study, Effect of Pretraining in Letter Naming upon Word Learning Ability and Follow-up Studies, has been completed. The first draft of the report has been written, but the final report is not yet available. A companion study, the Effect of Pretraining in Word Learning upon Letter Naming Ability, was also conducted.

Several studies focusing in whole or in part upon composition have been completed and are now entering the final draft stages. They are: A Study of Written Composition, Density and Complexity of Syntax, and Roles of Age and Intelligence in the Morphological and Syntactical Characteristics of Children's Written and Oral Language Production.

The Oral Language activities have also resulted in the development of a program for five-year-olds. This will be field tested beginning in September, 1969. Two studies, The Acquisition of a Supplementary Dialect and Supplementary Dialect Training and Reading Achievement have been completed. Final reports on these studies are being readied for distribution during the fall of 1969.

Extensive revisions of the Language Arts and Verbal Learning Program have been made during this year. The Program has been tailored to conform to the programmatic emphasis of the Center. This resulted in the consolidation of a number of activities into the major effort of curriculum development and the termination of several activities which were not directly contributory to a planned program.

## Mathematics

Up to 1968 the Mathematics Program had been project oriented. Under this arrangement the resources of the program were assigned to principal investigators who conducted research and development projects all of which were, of course, related to the goals of the Center. During the school year 1968-69, a shift in the focus of the Center from a project to a program orientation was reflected in the Mathematics Program. Individual projects were reduced in scope or terminated and the resources thereby made available were concentrated in a unified program.

The first half of the school year 1968-69 was devoted to completing or redirecting activities to better fit a programmatic approach. These activities were:

1. The completion of a paper (in press) on results of research performed over the past two years by Dr. Leslie P. Steffe (with Dr. Russell Carey). Several papers were also prepared and presented at national meetings.
2. The investigation by Dr. Edith Robinson of children's ability to comprehend concepts of projective geometry in kindergarten and grade one. This project culminated in Practical Paper No. 18 which is in press at the time of writing; other papers resulting from this project are expected in the future.

3. The initiation by Dr. William D. McKillip of a study on the teaching of signed numbers in the elementary school. This study was suspended when Dr. McKillip became Mathematics Program Coordinator; it may be activated at a later date if and when this topic appears appropriate in the development of the program.
4. The development by Dr. Michael Mahaffey of topics in a geometry curriculum for grade one. These materials were used at the Clayton County Field Center during the academic year 1968-69 and the results of this work have been recorded in Practical Paper No. 8, Geoboard Geometry.
5. Research activities directed by Dr. Joseph R. Hooten at the Clayton County Field Center by graduate students. These research activities have resulted in Research Paper No. 12 which is being processed for publication by the Research and Development Center.
6. A curriculum development project conducted by Dr. Len Pikaart in cooperation with one public school of Mitchell County, Georgia, as a result of which a set of supplementary materials for grade one has been produced.

The second half of the school year 1968-69 was concerned with the shift in focus from project-oriented research and development activities to a single program. In this the main effort was and continues to be the development of curriculum materials for the Clayton County Field Center. These materials include both preprimary and primary units with emphasis on the following aspects: 1) an analysis of scope and sequence of mathematics for the preprimary years, 2) the production of curriculum materials to implement this scope and sequence. Two units, Patterns (Practical Paper No. 15) and Matching (Practical Paper No. 10) have been completed by Dr. McKillip and further units are under development at this time. Beginning June 1, 1969, and continuing into the fall, resources of the Mathematics Program are concentrated on the development of curriculum materials.

For the primary grades the curriculum will consist of an arithmetic text series, supplementary curriculum materials and concrete aids, and enrichment materials involving areas not normally investigated in the first three grades. The plan is to include a geometry sequence involving topology, projective geometry, metric geometry, and concepts of space geometry. It is also proposed to make an analysis of the instructional objectives which can be accomplished through the use of this geometry sequence. Other enrichment materials which introduce the development of logic, concept of limit, and probability are being planned but are not yet under development. It is our objective not only to produce these materials, but also to test them experimentally in order to evaluate their suitability for preprimary and primary pupils.

It should be noted that the shift from project orientation to program orientation has been accomplished readily because the excellent research and development activities in the projects underway were suitable for utilization within a programmatic focus. Both the research results and the products already developed are being utilized in the Mathematics Program which is now emerging in the Center.

## Music

The objective of the Music Program of the R & D Center is to develop specific music teaching processes (content, sequencing, techniques, and pacing) which will stimulate the music growth of young children. These processes are intended to effect comprehension of music fundamentals, mastery of basic music performance skills, and enjoyment of music all at an earlier age and more quickly than has normally been accomplished in the past. The main thrust of the program is at present concerned with teaching children of ages three to eight years.

Prior to the 1968-69 school year an experimental project entitled Demonstration of Music Composition as Stimulation for Music Learning was conducted at the third-grade level. This study produced an evaluative instrument for assessing music abilities and an instructional music program for eight-year-olds.

A music curriculum entitled Developing Basic Concepts of Music was completed in December, 1968. It is designed for use by classroom teachers of kindergarten and first-grade children.

During this year, recognizing the great importance of aural training at early ages, the music investigators began a study to determine the extent to which aural concepts of music pitch could be developed in five-year-old children. This study, conducted in kindergarten classes in Oconee County, lasted from February until May, 1969. Lessons were taught twice a week for a total of 30 minutes weekly. One group used singing and keyboard instruments: this technique provided graphic, spatial, and physical reinforcement of aural perception. A second (comparison) group used singing and flannel board representation of pitch levels, providing less reinforcement.

One of the real benefits of this project was the development of a pitch discrimination test for use in measuring the effectiveness of teaching procedures. This test indicated that there were no significant differences in the two methods. The investigators felt, however, that the study was hindered because too little time was available for actual teaching in the short class periods allotted to music.

Another important project for the year is being completed during the summer of 1969. A research assistant made a thorough study of the reading lessons prepared in the Language Arts Division of the R & D Center and developed a music program for beginners to be used with the beginning reading program. This effort, designed to reinforce both the reading and music programs, will appear in the near future as Practical Paper No. 19.

In order to acquire additional information concerning the capabilities of three- and four-year-olds, a music research assistant was assigned to teach classes in the West Broad School in Athens. The assistant maintained a diary on each lesson and teaching experience. This observational research is proving to be valuable in structuring new material for the very young.

Considerable effort currently is being devoted to designing a conceptual framework for music teaching, homogeneous with the programmatic focus of the Center. The aim of this framework is the establishment of a logical, structured, sequence of music experiences leading to the development of musical understanding, ability, and enjoyment.

## Physical Education

The Physical Education Program of the R & D Center is involved in the design and subsequent field testing of a program of studies which will develop basic concepts of movement in children three through twelve years of age.

The Physical Education Program of the R & D Center was planned to enable children to acquire a background in motor development before engaging in activities which demand a high degree of proficiency. To make it possible for more children to participate, not only in games, but in all phases of movement is the foremost objective of this program.

The curriculum development program was initiated by gathering baseline data on the motor development of young children. A unit of instruction, Movement Exploration (Practical Paper No. 3), was written for field testing. For ease of handling, the research was divided into distinct areas: (1) appropriateness and effectiveness of content and (2) teacher effectiveness.

To implement the study on the effectiveness of the content of the lessons, one kindergarten class in Oconee County used the material; it was taught by the regular teacher. Another kindergarten in Oconee County served as the control group; the lessons were not used there.

For the study on the effectiveness of the teacher, the first, second, and third grades in Oconee County Elementary School and the first, second, and third grades in Oglethorpe County Elementary School were taught by trained physical education teachers. The control group were the first, second, and third grades in the Greensboro Elementary School in Green County where no planned program of physical education existed. Pre- and posttests were given to all of these pupils. Data are ready to be analyzed.

Closely allied to the study of teacher effectiveness was a third study dealing with the role of physical education in the development of masculinity in young boys. Two groups, one under a male physical educator and the other under a female physical educator, were observed. All subjects were administered pre- and posttests dealing with androgynous behavior, motor ability, and physical fitness. Statistical data were compiled and are being studied at this time.

A fourth study emanating from the original studies was conducted by the Physical Education Coordinator and the Language Arts Coordinator to try to determine whether or not changes can be detected in the handwriting of children who follow a program of physical education designed to influence movement. For this analysis, the two kindergarten classes in Oconee County were used. Analysis of the data is presently underway and will be reported.

Evaluative instruments in the field of physical education are designed to measure the components of motor ability, physical fitness, strength, skill, etc. A study of existing instruments (see Practical Paper No. 4) revealed that no tests are available to measure the level of understanding and the analytical ability used in accomplishing activities involving movement. Some attempts have already been made to devise evaluative instruments to measure intellectual involvement and subsequent analysis leading to discovery and skill in movement. A statistical scoring and analysis test has been outlined and further work on this is continuing.

The unit of instruction, Movement Exploration, was prepared for six-year-olds, but later tried out with three- to eight-year-olds.

Some lessons from this course were given to three- and four-year-olds at West Broad School, Athens. Critical observations of subjects and materials as the teacher taught the lesson showed that the lessons in their present form were too advanced for the very young child but valuable information for the revision of the program was gained in this experiment.

## Science

The objectives of the Science Program of the R & D Center have been to assist children in learning how to interpret their physical world by providing experiences that will enable them to:

1. Acquire skills or competencies that lead to meaningful interpretations. For example, children are taught to observe and describe the properties of an object.
2. Formulate conceptual schemes for use in processing, in a more efficient and meaningful way, new information about their environment.
3. Investigate natural phenomena that will stimulate or facilitate (a) the integration of information into generalizations and conceptual patterns, and (b) the development of skills or competencies that can have broad general application.

In order to reach the projected goals, the Science program has developed two major divisions. The coordinator, Dr. Ricker, and a principal investigator, each headed up one of these divisions.

Dr. Richer's efforts have been directed mainly to the six- and seven-year-olds. Two units were written and used for the first time at first- and second-grade levels at the Clayton County Field Center. These units, Sound Energy and Thermometer-Temperature embrace the scientific philosophy and overall objectives of the Center.

In addition to the new units, the first and second grades in the Clayton County Field Center continued to use AAAS materials, and selected units from the Elementary Science Study were introduced. The pupils in these grades were given pre- and posttests, but the evaluation data have not yet been analyzed extensively. A preliminary examination of the data has revealed areas where curriculum materials must be revised before the coming school year.

In an attempt to obtain additional feedback on the science units, Dr. Ricker taught these units twice a week in a private school in Athens. In keeping with the basic belief of the R & D Center concerning early stimulation, he found that the first-grade pupils in the Clayton County Field Center who had been in the experimental program for two years (four- and five-year-olds) far surpassed local first-grade pupils who had had only one year in kindergarten. He found no difference in performance on the science units between the experimental second graders at Clayton County Field Center who had one year of pre-primary, and the normal second-graders who had had a year in kindergarten.

The second division of the Science Program is under the direction of Dr. William Zeitler who has been a research associate with the Research and Development Center for three years. In the past, Dr. Zeitler's interest has been centered on the four- and five-year-olds in a highly disadvantaged area of Gainesville, Georgia. He has developed an Inventory Test to measure competencies in the use of scientific processes by children aged three, four, and five years. This Inventory Test has been used as a pre- and posttest at the beginning and end of the program in the schools of Gainesville. In addition, a posttest followed each lesson.

The same materials and procedures used by Dr. Zeitler with the four-year-olds in Gainesville were also used successfully with the three-year-olds at the Clayton County Field Center. In addition, Dr. Zeitler used AAAS lessons and units from Elementary Science Study and Science Curriculum Improvement Study with the four- and five-year-old children in Clayton County. Data have been compiled and are ready to be analyzed.

## Social Science

With the change in program coordinators for the Social Science Program, there has been, during 1968-69, a modification of several aspects of the Program. One major change made by the coordinator was to move toward a planned program for social science instruction in the Clayton County Field Center. Previously, activities carried out in the Program reflected the interests of individuals in the social sciences rather than a planned program.

Another change that took place was in the statement of the Program's objectives. While the overall objective of the Social Science Program remained essentially the same as in previous years, an elaboration of the objective was undertaken by the new coordinator, in concert with the other program coordinators. This change was effected in order to move to a more programmatic effort in the Center's Substantive Program.

The objective of the Social Science Program is to aid children in the interpretation of their social world. To this end, the social science curriculum is being designed to:

1. incorporate the intellectual processes and social studies skills needed to interpret social phenomena at each age level, beginning with age three;
2. present a conceptual framework for the social studies; and
3. introduce motivating and meaningful activities drawn from the social world in a systematic manner in order to assist the child (a) in formulating generalizations about man-man, man-land relationships, and (b) in developing skills associated with the social studies.

The Social Science Program discontinued the development of the Geography Curriculum Project and focused upon the problem of formulating objectives and developing activities leading to these objectives in the Social Science Educational Stimulation Program. The unit, Getting Acquainted, with its emphasis on social adjustment of the three-, four-, and five-year-olds during the initial weeks of school was incorporated into the curriculum for the 1968-69 year. The unit, The Family, with its emphasis upon social control, social organization, and socialization, was developed and field tested with three-, four-, and five-year-olds. Revisions are now being made in order to incorporate this unit into the curriculum for the 1969-70 school year. In addition, two units, focusing upon George Washington and Abraham Lincoln, with an emphasis upon change, were developed and pilot tested. These units are being revised for field testing during the coming year.

During the past year, the six- and seven-year-old children in the Clayton County Field Center used commercially prepared materials for social science instruction. During the spring of 1969, materials developed for Project Social Studies, University of Minnesota, became available. They are being modified for use with the five- through eight-year-olds during the school year 1969-70.

# DEVELOPMENTAL PSYCHOLOGY

In an effort to develop a programmatic structure within the Center, the program designated as Influencing Variables was discontinued during 1968-69 and all of its projects were either transferred, phased out, or retailored to fit into the Developmental Psychology Program, one of the Center's three major components, by the end of the year 1968-69.

The general objective of the Georgia R & D Center is to optimize cognitive learning and development of children age three through twelve through early, continuous, and sequential structured stimulation. The Program Development component is primarily concerned with the generation and specification of curricular processes (including content) which are effective in both laboratory and the experimental school setting. (The R & D process necessarily involves an evaluation of the effectiveness of its "products"--curricular process--as "institutionalized" in the total educational setting.) The Developmental Psychology component is primarily responsible for providing an adequate knowledge base (cognitive development and learning) relevant to both the development and specific curriculum (e.g., mathematics) and the more generalized implications and outcomes of the educational program (i.e., information seeking, competence, motivation, etc.). The Evaluation component of the R & D Center is responsible for the development of appropriate, theory-based technical solutions (e.g., instrumentation for evaluation of a particular program), that permit evaluation of the various aspects of the R & D program activities. Thus, the conception of research and development in education encompasses the development of effective curricular processes (Substantive Programs) requiring an adequate knowledge of the principles of cognitive development and learning (Developmental Psychology) and such evaluation activities as are appropriate to the psychological and educational principles that guide our activities (Evaluation).

Modern cognitive-developmental theory conceives intelligence as a biological adaptation process, and intellectual development is a product based on differentiation and hierarchial integration of cognitive structures under the pressure of both intrinsic (maturation) and extrinsic factors, including both the physical and social environment. Psychological analysis of development begins with the identification of components of behavioral organization that reflect particular adaptive capacities of the child as he is confronted with changing intrinsic and changing physical and social reality. Behavioral organization, at any point of time in developmental change, reflects the degree of cognitive stability or equilibrium made possible by the invariant assimilatory and accomodatory processes during informational exchanges with the physical and social environment. The structuring and content of the physical and social environment are major determinants of cognitive change. Thus, a structural analysis of the process of cognitive development can be examined through a variety of "content."

Five presumptions or working hypotheses about cognitive development are basic to our program.

1. The child is an active participant in learning. This "constructionistic" view of the child is reflected in Piaget's "operational" theory of intelligence and Rothkoph's analysis of mathemagenic behaviors, as well as general recognition (e.g., Bruner) of the changing nature of "transformational rules" characterizing children's mode of learning at different ages.
2. Cognitive development involves successive differentiation and hierarchial integration of adaptive structures that permit the individual to cope with social and physical realities of increasing complexity. The sequence of "stages" characterizing this process of cognitive development is invariant.
3. The process of cognitive development involves changing characteristics of the transformational rule systems (interpretation of the world) that determine the child's mode of adaptation and

learning. (Determination of the processes and mechanisms for generation of these changing capacities requires analysis of the interface between perception and thought and the specific role of modes of representation in learning.)

4. The process of structural change results from the child's confrontation with both physical and social reality. Maximum learning occurs when environmental conditions (e.g., curriculum) are slightly discrepant from the cognitive level of the child.
5. Language has a unique role to play in the process of cognitive development because it is a means of communication and at the same time has a varying impact on cognitive change at differing levels of development.

The importance which the Georgia R & D Center attributes to early, continuous, and sequentially structured stimulation and the basic principles indicated above suggest the following emphases for the study of cognitive development in the context of education:

1. What are the general, as contrasted with the specific, cognitive acquisitions resulting from particular curriculum programs? This problem involves two questions: a) To what extent do the acquisitions resulting from a particular curricular program (e.g., science) generalize or transfer to other conceptualizations (e.g., mathematics)? and b) To what extent are the acquisitions characteristic of all children and, conversely, is a particular curricular process effective with children of non-middle class cultural background or different learning characteristics?
2. What are the affective and motivational consequences of the curricular processes (e.g., "self-esteem," etc.)?
3. What are the extraschool effects of the curricular programs? That is, to what extent are the child's cognitive acquisitions within the school setting applied in the home and/or other environmental settings.

4. The transition from sensori-motor to imagistic and then formal-symbolic of the adolescent is critical to an understanding of the learning process at differing developmental levels. The effect of sequence of learning on generalization and transfer at the different developmental levels (i.e., modes of representation) constitutes a set of fundamental problems.
5. A most critical problem area is the determination of those environmental factors that facilitate the transition from one mode of representation and organization to one of higher level. The process of structural change that underlies the sequencing of modes of representation involves a thorough analysis of the role of language on the selection, storage, and retrieval of information as well as in the development of operational thought itself (i.e., coordination and transformation of information). Relatively little attention, for example, has been given to the possible effect of structuring the language environment so as to match the desired cognitive outcome. Such a proposition could have tremendous impact on the development of teaching strategies, particularly in the science programs.
6. Modern cognitive developmental theory has generally refrained from detailed analysis of the role of social experiences on learning and cognitive development. Of particular relevance to the Georgia R & D program is ecological analysis of the physcial, psychological, and social setting within the school, and the relationship of these components to the home environment. (It is a well-documented fact that home environment is significantly related to educational achievement. What is not known is the extent to which this relationship is a function of the inability of the school environment to overcome the patterns of cognitive learning and social interaction derived from the early home environment. One of the critical problems in research and development in education is to determine what variables, in a

specific sense, influence learning in the school setting and the development of educational programs that can overcome interfering factors generated by past experience and/or extraschool environments.)

7. Finally, the conception of intelligence as a biological adaptation process requires that we pay more attention to the biological factors, and especially to the biochemical and neurophysiological aspects of cognitive development. In terms of education, we are especially interested in examining the bio-environmental influences on development and learning (e.g., nutrition, etc.).

Implementation of our research and development activities is oriented toward elucidating the processes of cognitive development and learning suggested above within the context of the development of educational programs for young children. The nature and complexity of the task require the establishment of "clusters" of personnel with ample opportunity for information exchange and discussion since most of the issues of concern are at the "interfaces" of components of psychological and educational processes. Thus, individuals primarily interested in the application of curricula processes (the Delivery System), curriculum development (Substantive Programs), researchers concerned with the process of cognitive development, and those concerned with the establishment and measurement of outcomes (Evaluation) together constitute a necessary group for optimized R & D effort.

The following specific steps have been taken to implement the Developmental Psychology component of the Georgia R & D program:

1. The recruitment of talent necessary to implement this program is underway and partially completed (through reorganization of our program). An advisory group of individuals from Psychology, Sociology, Child Development, and Educational Psychology Departments has been formed to aid in furthering both the specific problem of recruitment and the more general problem of program planning.

2. A series of conferences is planned to highlight the issues and problems inherent in developing effective educational programs of early, continuous, and sequential structured stimulation for children aged three through twelve.
3. Coordination with other research and development centers will be intensified through conferences.
4. Programmatic research plans for each area outlined above are in various stages of development. A primary concern is the determination of the sequence and conditions of transition of cognitive structures. Research (both longitudinal and experimental) concerned with the development of specific problem-solving strategies associated with the learning of mathematical concepts as well as concepts of space and time will be continued. In addition, research on the interrelationship of these processes and language learning is in the planning stage.
    a) Currently, the longitudinal research program involves the following specific projects:
        1) A longitudinal study of conservation concepts with appropriate comparison of experimental and control groups in the experimental school.
        2) A longitudinal study of problem-solving strategies with particular reference to the child's ability to maintain sequential ordering of environmental events and to conserve certain systems of sequential orderings (permutations).
        3) An ecological study of classroom behavior that is oriented toward the identification of four aspects of the classroom learning situation: (a) degree of task involvement and activity preferences; (b) extent to which information-seeking (curiosity) behaviors are stimulated and reinforced; and (c) nature of information interchanges between teacher and child with special reference to the "match" between teacher information and the child's capacity for

assimilation of that information; (d) development of procedures for identifying the status of children with respect to attribution of control of achievements and goals (i.e., "locus of control").

b) Research relevant to sequences of cognitive acquisitions and conditions determining transition to higher levels of cognitive organization is currently concerned with four specific kinds of research projects:

   1) A study of the conditions that facilitate the acquisition of certain mathematical concepts, and those of space, time, and causality.

   2) The effect of various modes of presentation (e.g., object vs. symbolic) on the selection, storage, and retrieval of information for children of different ages and cultural background.

   3) Study of the conditions maximizing transfer and persistence of cognitive learning. Initially, these projects are concentrating on the effect of sequence on selected mathematics learning (e.g., class and number concepts) and the transfer of these concepts to extraschool setting (e.g., the home).

   4) Study of the interrelation of perceptual and cognitive acquisitions, particularly the extent to which perceptual information-processing mechanisms contribute to cognitive transitions. For example, one project is con-concerned with changes in perceptual illusions as a function of developmental level and another with the stimulus factors controlling attention and the extent to which these conditions facilitate concept learning.

c) A series of studies concerned with the social context effects on cognitive learning is projected. One project will examine the child's interpretation of interpersonal relationships and the extent to which these interpretations are related to other aspects of logical thought development. A series of experimental studies are planned in which the social context of learning, as well as the degree and type of social experience that influences rate of cognitive acquisition are to be examined. Finally, we are particularly interested in determining the extent to which it is possible to overcome the effects of certain variables within the home environment and thus maximize school learning.

d) The interface of language and problem-solving or thinking is of fundamental importance. It is our intention to implement a more extensive research and development activity related to the relationship between language learning and the development of conceptual organization.

e) Finally, a major effort, both within the school concept and within the laboratory concept, is being launched to determine the affective and motivational effect (and side-effect) of cognitive stimulation. At the present time, our efforts are geared to determine the conditions that maximize epistemic curiosity and creativity in the context of school learning.

# EVALUATION

The overall objective of the Evaluation Program is to determine the effect of early and continuous educational stimulation on children. Since formal schooling for the very young departs somewhat from prevailing instructional practices, the specific task is to examine children aged three to twelve years who are being subjected to early stimulation and make use of observations and conclusions in devising new measures of evaluation.

A fundamental requirement of research and development is evidence of the success or failure of its efforts to achieve objectives. The evaluation of success or failure is being used at each step in the revisions of the Center's program, as has been done for formative evaluation of instructional outcomes. In addition, a separate program makes summative evaluations of the extent to which gains in the main longitudinal study are being achieved, maintained, and enhanced over the period from age three to twelve years.

In collaboration with the program coordinators, the Evaluation staff studies the objectives of the curriculum programs. From this joint study is established whether or not particular tests and test-item types for use in measuring achievement in declared objectives are appropriate. Examples of this phase of the work are found in the Pre-Reading Skills Inventory and a Pre-Mathematics Skills Inventory which have already been developed and pilot tested -- see Research Papers Nos. 10 and 11. The method of evaluation at present in use in the R & D Center is aimed at the following goals: (1) to designate areas of developmental growth in three-, four-, and five-year-olds, (2) to point out symptoms of growth within these areas, (3) to describe various activities that enhance this development, (4) to devise a check list for recording evidence of certain symptoms; the check list can be used as a class record or an individual profile.

In an attempt to define more closely a control population, a new control group of subjects will be added in 1969-70 to the population in addition to the regular incoming three-year-olds. This control class of sixty six-year-olds will also be housed at the J. W. Arnold School. These six-year-olds have not received preschool treatment except for a few who have attended private kindergartens. Included in this new six-year-old control group will be a number of children who, as three-year-olds, applied to participate in the R & D experimental work at the Lillie E. Suder School but were not selected. Some classes at the Lillie E. Suder School will also continue to serve as comparison groups and for this purpose will be tested at the same time as the experimental population in the J. W. Arnold School.

During the year 1968-69, a review of the achievement test batteries to be used for summative evaluation yielded two that best meet requirements: Metropolitan Achievement Tests and the Stanford Achievement Tests. Consultations were held with the staff of Harcourt, Brace and World, and it was decided that the Stanford Achievement Tests were the most appropriate for our long range objectives.

Summative testing for the school year 1968-69 is shown below:

| Age | Test | Form | Date |
|---|---|---|---|
| 3 | Stanford-Binet | C | 10/68 |
| | *TOBE | K | 4/69 |
| | Pre-Reading Skills | I | 5/69 |
| 4 | *TOBE | K | 4/69 |
| | Pre-Reading Skills | I | 5/69 |
| 5 | Stanford-Binet | C | 2/69 |
| | *TOBE | K | 4/69 |
| | Pre-Reading Skills | I | 5/69 |
| | Stanford Achievement Primary I | W | 5/69 |
| 6 | Metropolitan Readiness | A | 9/68 |
| | Stanford-Binet | C | 2/69 |

| Age | Test | Form | Date |
|---|---|---|---|
|  | *TOBE | L | 4/69 |
|  | Stanford Achievement Primary I | W | 5/69 |
| 7 | Metropolitan Achievement Primary I | A | 9/68 |
|  | Stanford Achievement Primary II | W | 5/69 |

*TOBE - Tests of Basic Skills - Language Arts, Mathematics, Science, Social Studies.

## TECHNICAL SUPPORT

The Technical Support Program is staffed with specialists in data processing, editing and publishing, communications, and school organization and administration. The primary function of this program is to provide the R & D researchers and staff the ability to analyze and communicate their accomplishments. The four components of the Technical Support Program are: Statistical Services, Publications, Dissemination, and Field Centers.

### Statistical Services

The Statistical Services section was organized to provide data processing services for the R & D Center. The two main objectives of the section have been (1) to design and maintain an information storage and retrieval system for data on the experimental subjects in the longitudinal sample; and (2) to provide data analyses for the R & D researchers. A third objective was added as the year progressed: to provide management systems and procedures for the entire R & D Center.

The initial effort was to define individually the experimental population and to accumulate all available information collected over the previous two years. The data assembled were then reduced to a card format and eventually placed on magnetic tape. The bulk of the data is standardized test scores with limited biographical information.

Once data for the year before 1968-69 had been collected, the design of a data collection and retrieval system began. Starting with the two areas already defined (biographical information and standardized test), the addition of other areas were considered. These areas include psychological factors, environmental factors, teacher variables, and school characteristics. No final agreement has yet been reached on the individual variables to be used to describe these areas.

Early in 1969 we recognized that a system was needed to assure timely and accurate information concerning results from standardized tests such as Metropolitan Achievement, Stanford Achievement, Metropolitan Readiness, and others. To meet this need a system and programs were developed to permit: (1) keypunching item responses, (2) computer scoring of the item responses, (3) interpretation of the scores for grade equivalent, stanines, and other categories, and (4) description of the results in means and standard deviations. This system provides information at three levels: item responses, raw scores, and interpretation of scores.

Data analysis for researchers is a continuing process. It involves providing keypunching services, analysis of data through "canned" or standard programs, and development of original programs and systems.

A systems study of the application of business and management procedures in the Center has begun.

## Publications

During the year 1968-69 the R & D Center made a special effort to standardize the production of R & D reports and papers and to upgrade the quality of materials sent out by the Center.

In November, 1968, a full-time editor was added to the Center staff. In addition to editing, the editor has responsibility for the work of the staff who reproduce materials. Since the position was established, the Center has been able to increase the number of reports, etc., formally submitted to the Office of Education. For a list of materials prepared for submission during the past year. (Appendix V)

In the early months of 1968, a system of color coding for the substantive programs of the Center had been set up. In reorganizing the work and upgrading the quality of the materials, it was decided to abandon color by subject and substitute color coding by category of paper as follows:

| Category | Color |
|---|---|
| Official Reports (R & D quarterly, annual reports, etc.) | Antique |
| Position Papers (policy, models, schemes, proposals for new programs, etc.) | Medium Blue |
| Practical Papers (curriculum in experimental stages) | Goldenrod |
| Research Papers (interim reports on projects, project summary or commentary which has not the status of a technical paper) | Orange |
| Technical Papers (in-depth reports on projects; "final" papers on curriculum experiments, dissertations or papers resulting therefrom, etc.) | Medium Green |
| Occasional/Theoretical Papers (speeches, educational topics--general) | Light Blue |
| Reprints and Preprints | Mustard |

The covers and the layout of Center materials have also been standardized and efforts are still continuing to find ways of giving materials a professional appearance without increasing production costs.

At the close of the period under review, the staff of the Publications Division is concentrating its efforts on the production of curriculum materials for use during the coming school year at the Clayton County Field Center and in Follow Through and other experimental groups where the work can be observed and tested.

# Dissemination

The purpose of the Dissemination Program is to inform the public about significant research and development findings that are directly related to the focus of the R & D Center so as to encourage schools to adopt improved educational practices.

Principal investigators at the Center are charged with the responsibility of submitting their own articles for publication. Published articles are listed in the Bibliography. (Appendix IV)

Practical papers, i.e., curriculum materials, are regarded in the Center as experimental and as long as they are in developmental stages, they are not available for general distribution. Revision of the materials goes on constantly as and when feedback is received from the field center teachers. In addition to their use in the field centers, curriculum materials are also tried out by other selective groups who supply feedback after teaching with and testing R & D materials. Certain individuals who are making studies of curriculum materials are invited to study and comment on materials.

The *Journal of Research and Development,* Volume 1, Number 4, Summer 1968, was devoted exclusively to reports on the nine Research and Development Centers supported by the Bureau of Research of the U.S. Office of Education. This *Journal* carried pertinent information on all of the R & D Centers. More than 3,500 copies of this particular journal have been distributed in the following categories:

| | |
|---|---|
| Georgia representatives to the United States Congress | 12 |
| Department of Education in each state of the United States | 250 |
| Deans of all Colleges of Education in the United States | 800 |
| National R & D Centers | 50 |
| National Library Association | 5 |
| News Media | 50 |
| Superintendents of Schools in the State of Georgia | 200 |
| Subscribers | 400 |

| | |
|---|---|
| Sale of this issue | 750 |
| Permanent mailing list | 1000 |
| Board of Regents, University of Georgia | 15 |
| Administrative Staff, University of Georgia | 40 |
| Faculty, College of Education, University of Georgia | 400 |
| Educational Organizations in Georgia | 15 |
| | 3,957 |

A breakdown of the distribution will convey some idea of the wide dissemination of the valuable information contained in this report.

The report on the R & D Center at the University of Georgia is an accurate account of the history and activities of three years of operation. Five hundred reprints of this report were received and have been distributed widely.

Staff members have continued to keep the public informed about the Center through speeches before local, state, regional, and national audiences; and through individual conferences with key people. A listing of some of the speeches delivered by R & D staff will be found in Appendix No. IV.

The film, Educational Stimulation in the Pre-School Years, which was produced in the spring of 1968, is still requested frequently. This film which was made in three of the R & D field centers in Georgia, shows the pupils involved in various classroom activities. Originally only five prints of the film were made, but to meet the heavy demands for showings, ten additional prints were made and all are now in constant circulation.

A packet of materials has been assembled which includes reprints of articles, script for speeches, and papers which explain the focus, goals, and activities of the Center from its beginnings to the present time. These packets are sent to individuals who request information, and their names are added to the permanent mailing list.

Following suggestions from the subgroup on Dissemination at the Conference of R & D Directors held in June 1969, the plan for dissemination of Center materials is being revamped. A greater effort will be made to disseminate information in ways that will make a greater impact on educational practice.

## Field Centers

The heart of the R & D Center is located in the field centers, because this is where the children are located. Without an environment conducive to innovation in teaching methods and research procedures, the R & D effort would not have an effective delivery system. Regardless of how good theories, hunches, and curriculum materials appear in the eyes of their originators or other researchers, they remain in the realm of theory until they have been field tested with many children under a variety of conditions. Only after field testing and the necessary revisions, deletions, and additions have been made can the R & D Center claim that findings are capable of making an impact on actual educational practice.

The R & D Center's field centers are those schools where a cooperative effort in intense research and development is conducted by R & D Center staff working closely with the school systems. Schools where an occasional study is conducted are not regarded as field centers. The major field center is located in Clayton County at Jonesboro, Georgia, and is financed jointly by the Clayton County Board of Education and the R & D Center. A longitudinal study, covering pupils aged three through twelve is in progress there. The first experimental classes in Clayton County began in the fall of 1966 with 60 three-year-olds, 60 four-year-olds, and 60 five-year-olds. At least 60 three-year-olds have been added each year. The proposed distribution of the population for the 1969-70 school year is shown below:

|  | Experimental |  |  |  |  |  | Control |
|---|---|---|---|---|---|---|---|
|  | Age |  |  |  |  |  | Age |
|  | 3 | 4 | 5 | 6 | 7 | 8 | 6 |
| Class 1 | 15 | 20 | 18 | 19 | 29 | 28 | 20 |
| Class 2 | 15 | 20 | 18 | 18 | 28 | 27 | 20 |
| Class 3 | 15 | 19 | 18 | 18 |  |  | 20 |
| Class 4 | 15 | 19 |  |  |  |  |  |
| Total | 60 | 78 | 54 | 55 | 57 | 55 | 60 |

Other field centers where research was conducted this year are located in Oconee County, Gainesville City, Oglethorpe County, and Clarke County. The particular projects in each center are reported in the content of the Substantive Program in this report.

As the R & D Center moved toward a programmatic approach, a decision was made to concentrate efforts and resources in the Clayton County Field Center in 1969-70. This increased emphasis on the Clayton County Field Center has already resulted in: (1) the addition of a site representative who is a liaison between the R & D Center and the Clayton County Field Center, (2) plans to add for the school year 1969-70 curriculum specialists in the school at Jonesboro to act as counterparts of the specialists in the R & D Center, (3) utilization of every available resource in order to complete the curriculum materials in process for the 1969-70 school year, and (4) increase in overall support of the field center by provision of curriculum supplies and equipment.

The Clayton County education authorities are providing a new location for the experimental population. Before school opens for the 1969-70 school year, the Clayton County Field Center will be moved from the Lillie E. Suder School complex to the J. W. Arnold School, also in Jonesboro, Georgia. All pupils at the Arnold School will be R & D population and as a consequence, it is anticipated that closer experimental control of the population will be possible.

An interesting and close working relationship has also been developed this year with the staff of the School of Home Economics of the

University of Georgia in the area of child development. This cooperative effort will provide an opportunity for R & D researchers to work with pupils in the experimental school on the campus. It will also provide desirable interaction between researchers and child development specialists in the School of Home Economics.

## FOLLOW THROUGH

Under a subcontract with USOE the Center participated in Follow Through and Head Start activities. These activities were primarily carried out in five locations: Lander-Riverton, Wyoming; Great Falls, Montana; Jasper, Georgia; Gulfport, Mississippi; and Greenwood, South Carolina. The support for these centers included consultation, materials, video taping, and some limited evaluation.

Many of the materials and activities developed by R & D for use in the Clayton County Field Center were modified to meet the objectives of the Follow Through and Head Start programs. In conjunction with these programs a summer institute was held July 21 - August 2, 1968, at the University of Georgia. The purpose of the institute was to train the Head Start and Follow Through teachers to use the materials to the best advantage.

## HISTORICAL SUMMARY

Rationale--American education is challenged by the demands of the increasingly rapid change in the world of today. To date, the response has been largely to extend organized education farther into the life cycle for more and more individuals in an effort to increase by conventional instruction the reservoir of cognitive competence in American society. One clear alternative is to start education earlier and intensify its impact by cumulative effects achieved through increased understanding of the amounts by which effective cognitive competence can be increased and the procedures through which maximum increases in such effective competence can be developed.

The Research and Development Center in Educational Stimulation at the University of Georgia accepts this alternative. At the same time, a maturational approach that waits for learning readiness to develop on schedule is rejected. Intellect develops in response to stimulation, the plan at the Georgia R & D Center is to intervene to this end. Much encouragement has been derived from recent writings of men such as Bloom, Hunt, Hebb, and Bruner and the related earlier and continuing work of Piaget on how the infant masters his world. Bloom's findings that fifty percent of adult intellectual capability is defined by age four and eighty percent by age eight have stirred us as well as others. Of course, the learning based on this intellectual development is achieved over a longer period, as he points out, but early stimulation of cognitive development is crucial. We take early schooling as the point of departure for this development.

An intensive cumulative follow-up is equally in order to identify whatever can be or is achieved early through improvement of schooling in the lower grades. Here the findings appear to be that continuously adapted instruction can increase the early gains, while unimaginative reliance on present procedures in the schools rapidly dissipates the advantages of an early start.

In the original proposal for this Research and Development Center in Educational Stimulation, submitted on December 1, 1964, three major objectives of its work were stated, as follows:

1. To probe the limits of cognitive, aesthetic, motor, and affective learning in children with the purpose of establishing new norms for learning, particularly cognitive learning;
2. To provide field tested structured material conducive to early and continuous stimulation; and
3. To disseminate research findings and materials to users as quickly and as widely as possible in such a way as to improve educational policies and practices.

The preceeding ideas were synthesized and stated in an hypothesis thus:

> The basic hypothesis that unifies the whole program of activities of this Research and Development Center is that early and continuous intellectual stimulation of children ages 3 through 12, through structured sequential learning activities will result in higher levels of ultimate achievement than would otherwise be attained.

Methods--A fundamental feature of the approach of the Georgia Center is the longitudinal study. If earlier schooling is good, it must show not only immediate but persistent effects. A longitudinal study was established in Clayton County, Georgia (a suburban county near Atlanta, Georgia) where classes began in September, 1966 for children aged between two years, eight months and five years, nine months. Provisions have been made to keep these pupils together in instructional groups as they pass through nine years of schooling. In addition, a new group of approximately sixty three-year-olds has been added each year. The Center also has access to and has used extensively other public-school populations of three-, four-, and five-year-olds in rural and urban settings.

Substantive Programs--The unifying element of the Center has been the substantive area programs of stimulation related to curriculum development in each of seven fields: art, language arts, mathematics, music, physical education, science, and social science. The three major functions of these programs have been: (1) to review existing proposed instructional programs for early childhood which reflect educational stimulation and to select from among them and to test, in practical situations, those which appear to be most promising; (2) to consult with associated subject specialists regarding the need for newer instructional programs for children three through twelve years of age; and to assemble materials and procedures to fill any existing gaps so as to produce a comprehensive long-term instructional program in educational stimulation, and (3) to institute comprehensive longitudinal instructional programs designed to provide data relative to the ultimate effects of early and continuous educational stimulation. The several programs are at different stages of development depending upon the year initiated. The language arts program has received the major emphasis and presently has a curriculum plan for ages three through six. Other program areas have partial plans for age groups three through seven. Extensive curriculum development is planned for the summer of 1969 and the materials will be ready for use in the Clayton County Field Center when school opens in September.

Two programs cut across these seven substantive area programs: Developmental Psychology and Evaluation. They will be discussed separately.

The recently organized Developmental Psychology program was preceded by an Influencing Variables Program involving studies concerned with those variables affecting classroom learning over which the school (or teacher) has relatively little control (e.g., personality, characteristics, cognitive style, basic learning characteristics).

Recent emphasis was upon such factors as logical reasoning and verbal mediation in improving learning. The interacting variables of concern are associated with the home and neighborhood on the one hand and with the teacher and other school factors on the other. The new developmental psychology program will be primarily responsible for providing an adequate knowledge base (cognitive development and learning) relevant both to the development of specific curriculum (e.g., mathematics) and the more generalized implications and outcomes of the educational program.

The evaluation program has as its chief function the formative and summative evaluation of the effects of the planned early, continuous stimulation. This includes establishing valid measures of the initial capacity of children as they enter the program, discovering or developing new procedures for supplementing standarized achievement tests, and consulting with personnel in the substantive programs concerning methodology. The primary functions are applied rather than theoretical in nature. The major effort is concerned with immediate applications to R & D Center projects and studies; however, some activities have involved theoretical implications such as Monte Carlo studies of statistical estimation. Extensive testing has been done in the field centers and cooperating schools. The major tests used have been the Metropolitan Achievement, Metropolitan Readiness, Peabody Picture Vocabulary, and Stanford-Binet. A few observational instruments have been developed to provide inventories of abilities such as skills in reading and mathematics.

Supportive Programs--Several supporting activities have been established as the organizational structure of the Center has evolved: field centers, dissemination, publications, and statistical services.

The field centers program has been basic to the operational structure of the R & D Center. All R & D programs have been tried in ongoing school situations at field centers or cooperating schools. In this respect, the R & D Center has given leadership and consultant service to systems with Title I and Title III projects under the Elementary and

Secondary Education Act of 1965, while the systems have in the process assumed large operational costs. In Clayton County and Oconee and Oglethorpe Counties we have been associated with innovative programs under Title III which are broader in scope than our immediate interest, but focused in such a way as to give us support. The same can be said of Title I collaboration and support in Athens and Gainesville, Georgia. During the past year, a decision has been made to concentrate activities in the Clayton County Field Center in order to develop a more unified program.

An intensive program of dissemination to major groups in the state and nation has been effectuated, and visits to field centers have seriously influenced thinking and theories about preprimary education. In addition, a motion picture film, Educational Stimulation in the Pre-School Years, which tells the R & D story, is circulated widely. R & D curriculum materials for the preprimary level are being used extensively in Project Follow Through centers scattered over the country.

A publications program designed to improve the presentation of R & D reports and materials has been initiated. This has significantly increased the number and quality of formally presented reports and papers.

As the requirement for techniques in the management sciences became apparent, a statistical services section was added. This section is presently (1) designing a data storage and retrieval system for the data collected on the longitudinal sample, (2) providing data processing services to the R & D researchers, and (3) performing initial studies on a management information system for the Center.

Summary--In the past four years the Georgia Research and Development Center in Educational Stimulation has made significant contributions to the study of early childhood, particularly in the area of cognitive development.

General research studies on the young child have been carried out, and numerous reports and publications have added to the literature.

The major emphasis in research has been the preprimary period and the effect of a formal educational scheme on this age group.

Curriculum materials and methods have been developed and field tested at both the preprimary and the primary levels. These materials and methods have been used extensively in R & D Center related schools and in USOE programs such as Head Start and Follow Through.

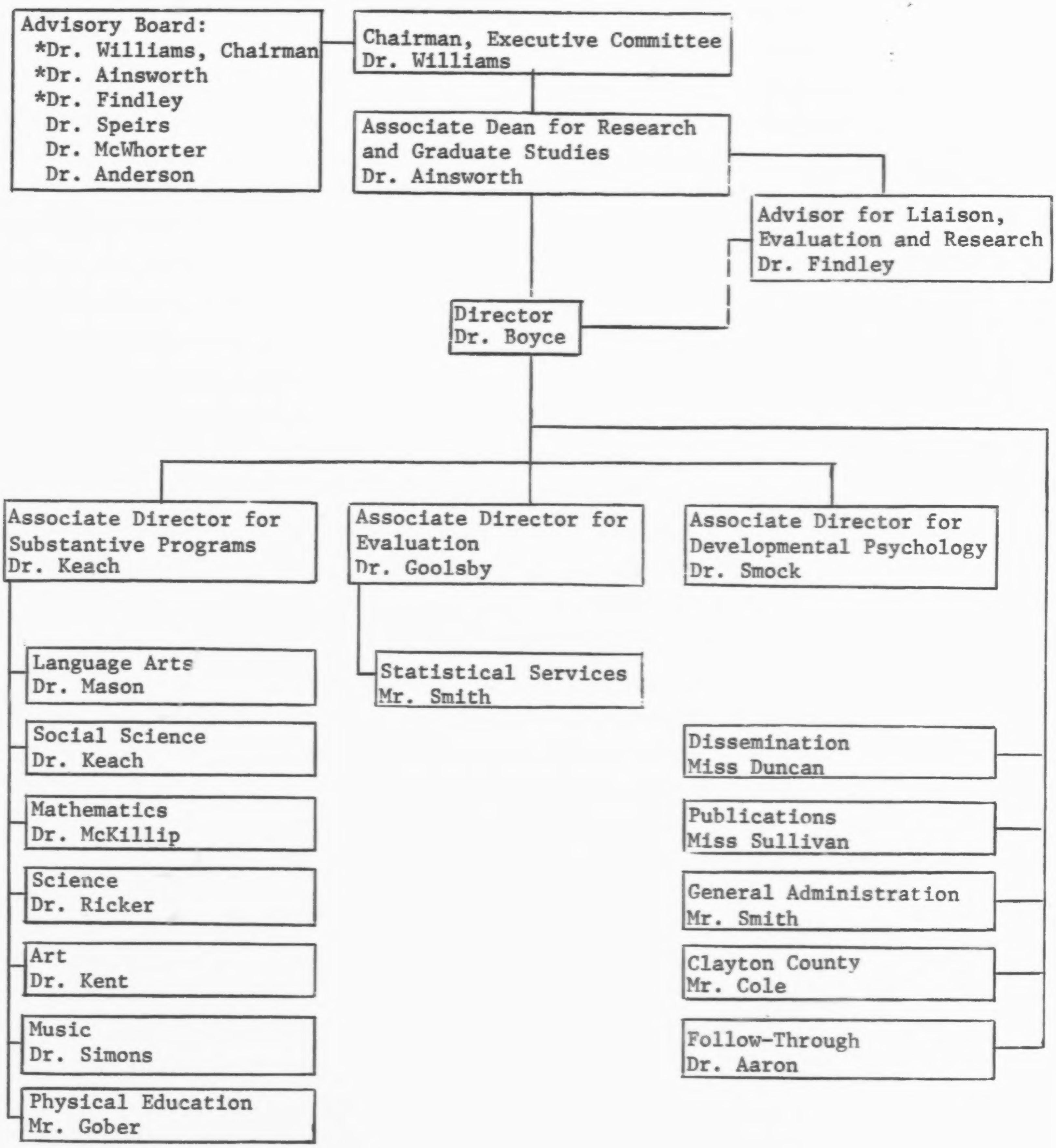
The unique contributions of the Clayton County Field Center cannot be overstated. Daily dealings with a stratified sample of children as young as two years, nine months, have enabled R & D Center personnel to try out a myriad of instructional methods in a variety of instructional topics. The results of these attempts include (1) the attenuation of much of the concern about possible adverse effects on young children, (2) a better understanding of the relationships between muscular activity and attentiveness, and (3) the accumulation of a stockpile of instructional techniques which are effective with young children.

Extensive experience has also been accumulated on the methods of evaluating young children. Tools to assist in this evaluation have been developed. Among these are observational checklists, a pilot test to teach children how to take a test, and numerous subject-related instruments.

One of the significant tenets of the Center is that the formation of an effective Research and Development Center is a learning process in itself. Organizing a center to best utilize the expertise of personnel on a university campus and yet to maintain a central objective is a significant endeavor.

Appendix I

# ORGANIZATIONAL CHART


Advisory Board:
*Dr. Williams, Chairman
*Dr. Ainsworth
*Dr. Findley
Dr. Speirs
Dr. McWhorter
Dr. Anderson
Chairman, Executive Committee
Dr. Williams
Associate Dean for Research and Graduate Studies
Dr. Ainsworth
Advisor for Liaison, Evaluation and Research
Dr. Findley
Director
Dr. Boyce
Associate Director for Substantive Programs
Dr. Keach
Associate Director for Evaluation
Dr. Goolsby
Associate Director for Developmental Psychology
Dr. Smock
Language Arts
Dr. Mason
Social Science
Dr. Keach
Mathematics
Dr. McKillip
Science
Dr. Ricker
Art
Dr. Kent
Music
Dr. Simons
Physical Education
Mr. Gober
Statistical Services
Mr. Smith
Dissemination
Miss Duncan
Publications
Miss Sullivan
General Administration
Mr. Smith
Clayton County
Mr. Cole
Follow-Through
Dr. Aaron

*Executive Committee

Appendix II

## PERSONNEL RESUMES

**ROBERT L. AARON**

Dr. Aaron came to the University of Georgia and the R & D Center as assistant professor in the College of Education and research associate in the Language Arts and Verbal Learning Program. Dr. Aaron's successful career in public schools forms a relevant background for his assignment at the R & D Center. Dr. Aaron was instrumental in organizing and was the first director of the DeKalb County Reading Center, Decatur, Georgia. His other public school experience included that as teacher and elementary school principal.

The R & D Center's initial envolvement with the Follow Through Program in 1968 was under the supervision of Dr. Aaron, as was the summer institute for Follow Through teachers.

Dr. Aaron received the A.B., B.S., M.Ed., and D.Ed. degrees from the University of Georgia.

**STANLEY H. AINSWORTH**

Dr. Ainsworth assumed an appointment as Associate Dean for Research and Graduate Studies at the University of Georgia in 1968. At that time he also became a member of the Local Advisory Board of the R & D Center. Prior to this assignment, Dr. Ainsworth had served at the University of Georgia as Chairman, Program for Exceptional Children, and Chairman, Speech Correction Area and Audiology and Clinical Psychology.

During his 34 years as an educator, Dr. Ainsworth has worked at national levels in his special field of speech correction. He came to the College of Education, University of Georgia, in 1953 from Florida State University, where he had been Chairman of Speech Correction and Audiology Area, Department of Speech. His high reputation as consultant and lecturer for many years is evidenced by the number of requests he receives from organizations such as USOE and the U. S. Public Health Service as well as many educational institutions.

Dr. Ainsworth holds the Ph.D. degree from Northwestern University in Speech Correction and Audiology and Clinical Psychology.

EUGENE M. BOYCE

Dr. Boyce came to the University of Georgia on July 1, 1968, as Coordinator of Substantive Programs with the R & D Center and Professor of

Educational Administration in the College of Education. On January 1, 1969, he was appointed Director of the Center.

Dr. Boyce has had long and wide experience as an educator at every level from public school to university. In 1950 he joined the faculty of Florida State University where his more recent experiences include Associate Dean of the College of Education, Head of the Department of Educational Administration, Acting Head of the Development of Elementary Education, and Director of the campus laboratory school. While on leave from F.S.U., Dr. Boyce was attached for two years to the Agency for International Development, Department of State, Washington, D. C., as Advisor to the Ministry of Education at Addis Ababa, Ethiopia.

Dr. Boyce earned the Ph.D. degree in Educational Administration at George Peabody College for Teachers, Nashville, Tennessee.

IRVIN H. COLE

Mr. Cole is the first appointee to represent the R & D Center at the Clayton County Field Center in Jonesboro, Georgia. In this newly created post Mr. Cole's, varied experience in administration and civic activities provide an excellent background for involvement with teachers, school administrators, and parents, and laymen on local and national levels.

Mr. Cole came to the University of Georgia on February 1, 1969, from Florida State University where he had held posts of responsibility at the University Laboratory School from 1955 to 1968. The experience in experimental educational projects gained during this period is now proving most valuable in the coordination task which Mr. Cole has undertaken at the Clayton County Field Center. He holds the M.Ed. degree from the University of Florida.

SARAH A. DUNCAN

Miss Duncan, Dissemination Coordinator at the R & D Center, joined the faculty of the University of Georgia on January 1, 1968. During a long and successful career in the public schools of the state as a classroom teacher, principal and curriculum director, Miss Duncan has done outstanding work for the Georgia school system. In particular, her experience as Director of an intensified statewide reading program for the Georgia State Department of Education in 1964 has proved a valuable contribution to the work of the Center.

Miss Duncan earned the M.Ed. degree and completed the sixth year of study at the University of Georgia.

**WARREN G. FINDLEY**

Dr. Findley, now Advisor on Liaison, Research and Evaluation, is a Professor of Educational Psychology. As original Co-director of the Center, he guided the early stages of the program when a more diverse pattern of activities was being explored.

He holds the Ph.D. degree in Educational Psychology from Columbia University. Dr. Findley has been active for the past 40 years in research studies involved in educational measurement projects and organizations. He is presently President of the Association for Measurement and Evaluation in Guidance, a division of the American Personnel and Guidance Association. He is also a member of the State Board of Examiners of Psychologists in Georgia. His current activities in the Center involve providing assistance with the longitudinal aspect of the study, with the evaluation of instrumentation for measuring early progress, and active liaison with related projects about the country.

**BILLY E. GOBER**

In July of 1968, Mr. Gober was appointed Coordinator of the Physical Education Program of the R & D Center. Mr. Gober received both the B.S. and M.A. degrees from the University of Georgia in Physical Education. His professional experience relevant to this present position includes: Physical Education Coordinator in an elementary school program; physical education instructor and football and gymnastics coach in high school; and supervisor of physical education and athletics for the DeKalb County, Georgia, school system. While serving in this recent position, Mr. Gober received national recognition for his work with trainable mentally retarded students in the area of swimming.

He is currently serving as Chairman of the Elementary School Physical Education Section of the Southern District Association of Health, Physical Education and Recreation, Coordinator of the Lifetime Sports Educational Project for the Tenth Congressional District, and a member of the Georgia Leadership Committee for the Health Education and Smoking Project.

**THOMAS M. GOOLSBY, JR.**

Dr. Goolsby came from Florida State University to join the Evaluation Division of the R & D Center in July, 1968. When the administrative framework of the Center was reorganized early in 1969, Dr. Goolsby was named Associate Director for Evaluation.

After receiving his Ph.D. in Educational Psychology, Psychometrics, University of Iowa, Dr. Goolsby became Assistant Professor of Psychology, Measurement, and Statistics at Southern California University. At Florida State University from 1964-1968, he was Director of the University Test Service, and Associate Professor of Educational Psychology and Research.

**EVERETT T. KEACH**

Dr. Keach, Associate Director for Substantive Programs and Coordinator of the Social Science Program, joined the R & D Center on August 1, 1968. Dr. Keach is a specialist in social studies and elementary education.

Dr. Keach came to the University of Georgia from the University of Minnesota where he had been Associate Professor in the Department of Elementary Education and Elementary Project Coordinator, Project Social Studies. Prior to this he held similar positions at the University of Vermont,

2

Harvard University, Emory University, and Agnes Scott College. Over the years Dr. Keach has been serving as consultant in social studies at various universities, educational organizations, and private corporations.

Dr. Keach earned the M.Ed. and D.Ed. degrees at Harvard University.

ROBERT B. KENT

Dr. Kent, Coordinator of the Art Program at the R & D Center and Professor of Art, College of Education, came to Georgia in 1967. Prior to coming to the University, Dr. Kent had over fifteen years' experience teaching and directing art programs in the public schools of Texas and California.

Dr. Kent specialized in American History in his undergraduate studies and then specialized in Art History, gaining his M.A. at Western Reserve University, Columbia University, after graduate study at Texas Western College and the Art Institute of San Francisco. Dr. Kent holds the degree of D.Ed. from the University of California, Berkeley.

GEORGE E. MASON

As Coordinator of the Language Arts Program, Dr. Mason has been with the R & D Center since 1966. Dr. Mason's work with the teachers involved in the

R & D Center program during the past four years has enhanced his well-established reputation as a reading specialist of high standing. His services as consultant and visiting lecturer in the field of reading are much in demand by educators at national levels.

Dr. Mason has served as a reading specialist in public schools from kindergarten through twelfth grade and as an assistant and later associate professor in eading at Florida State University. He has been a visiting lecturer at Appalachian State Teacher's College, University of Vermont, Syracuse University, University of Florida, University of Southern Mississippi, and Western Kentucky University. Dr. Mason earned his Ph.D. degree in reading from Syracuse University.

**WILLIAM D. MCKILLIP**

Dr. McKillip is Coordinator of the Mathematics Program at the R & D Center and Associate Professor, College of Education. He was appointed to this position in February, 1969. He had been an Assistant Professor of Mathematics in the College of Education at the University of Georgia since 1965.

Dr. McKillip came to Georgia from the University of Virginia where he worked in the area of mathematics education. His B.S. degree is from the University of Illinois, his M.A. is from San Diego State College, and he holds the D.Ed. from the University of Virginia.

KENNETH S. RICKER

Dr. Ricker is Coordinator of the Science Program for the R & D Center. He earned the D.Ed. degree at the University of Maryland after having earned the M.S. and B.A. degrees prior to this. He has taught science, his major interest, at the elementary, junior high, and university levels. His professional experiences before coming to the University of Georgia--in addition to teaching--included: (1) authorship of a primary grade science program for radio which is available for national distribution, (2) participation in a research project at Purdue University funded by USOE on "The Measurement of Cognitive Structures."

GENE M. SIMONS

Dr. Simons, Coordinator of the Music Program, at the R & D Center, holds the Ph.D. degree from Florida

State University, Tallahassee, Florida. His B.M.Ed. was earned at Murray State College, Murray, Kentucky, and his M.M. at the University of Michigan, Ann Arbor, Michigan. All of his professional experience has been in the field of music. He has taught instrumental, choral, general music, music appreciation, and music theory at elementary, high school, and university levels. In addition to teaching in his chosen field, he has been a successful conductor of university choral groups during his eight years on the faculty of Florida State University and also at the University of Georgia.

BILLY G. SMITH

Mr. Smith, Coordinator of the Statistical Services Section and Business Manager, came to the R & D Center from the Mead Corporation, Atlanta, Georgia, where he was a Senior Systems Analyst. His background in business includes computer operations and Accounting Manager, Southern Bell Telephone and Telegraph Company; and Technical Writer, Goodyear Atomic Corporation. Mr. Smith served as an Executive Officer, U. S. Army Signal Corps in Korea. He holds a B.S. degree in Mathematics from Auburn University.

CHARLES D. SMOCK

Dr. Smock is Associate Director of the R & D Center responsible for the Developmental Psychology Program. He is a noted researcher in Developmental Psychology and has published widely.

Since earning the Ph.D. degree from Syracuse University, Syracuse, New York, he has served on the faculty of major universities: University of Pennsylvania Medical School; Department of Psychology, Purdue University; Department of Child Development, Purdue University; Department of Psychology, University of Georgia. In addition, he was a visiting scientist, Institute of Sciences and Education, Geneva, Switzerland, where he worked with Jean Piaget.

MARGARET BRETT SULLIVAN

Miss Sullivan was appointed editor of the R & D Publications in November, 1968. She received her early education in Ireland, England, and France, and her university training at the University of Bordeaux and the University of Barcelona. After many years as a member of the British Foreign Service in Europe and the Middle East, Miss Sullivan was attached to the British Information Services in New York, New York, for three years. Prior to joining the R & D Center, she had been a senior school textbook editor with Rand McNally, Doubleday, McGraw-Hill and L. W. Singer (Random House).

Appendix III

## NATIONAL ADVISORY PANEL

Dr. Byron W. Hansford*
Commissioner of Education
Colorado Department of Education
Denver, Colorado 80203

Professor A. Sterl Artley
Department of Education
University of Missouri
Columbia, Missouri 65201

Dr. Benjamin S. Bloom
Department of Education
University of Chicago
Chicago, Illinois

Dr. C. Ray Carpenter
Department of Psychology
Pennsylvania State University
University Park, Pennsylvania
16802

Dr. Cynthia Deutsch
School of Education
New York University
New York, New York 10003

Mr. John Dobbin
Educational Testing Service
16111 Redington Drive
Redington Beach, Florida 33708

Dr. John C. Flanagan
President
American Institutes for Research
Palo Alto, California

Dr. Susan W. Gray
George Peabody College for
Teachers
Nashville, Tennessee 37203

Dr. Paul F. Lazarsfeld
Department of Sociology
Columbia University
New York, New York 10027

Dr. Hylan Lewis
Department of Sociology
Brooklyn College
Brooklyn, New York 11216

Mrs. Blanche Mahoney
3414 Gonewind Drive
Louisville, Kentucky 40299

Professor W. Edgar Vinacke
Department of Psychology
State University of New York
at Buffalo
Buffalo, New York 14214

*National Advisory Panel Chairman

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Myers, Robert E. Relationships of Teacher Orientations and Effectiveness Under Inductive and Deductive Teaching Methods. Ed.D. dissertation, University of Georgia, 1968.

Nesbitt, Mary C. Auding Achievement of First Grade Pupils Related to Selected Pupil Characteristics. Ed.D. dissertation, University of Georgia, 1968.

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Film:

Educational Stimulation in the Pre-School Years.

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Duncan, Sarah A. Early Childhood Education--What? Why? Where? When? April, 1969. Occasional Paper No. 3.

Findley, Warren G. Problems and Pitfalls in the Operation of Research and Development Programs. April, 1969. Occasional Paper No. 2.

Keach, Everett T. Trends in Elementary Social Studies. November, 1968. Occasional Paper No. 5.

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March 15 Report: Review and Evaluation Procedures (Local) or Review Mechanism Involving Professional Peers. March 15, 1969. Report No. 12.

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## Practical Papers:

Aaron, Robert L., and George E. Mason. Part II: Introductory Exercises in Reading. August, 1968. Practical Paper No. 13.

Aaron, Robert L., and George E. Mason. Part III: Introductory Exercises in Writing, August, 1968. Practical Paper No. 14.

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McKillip, William D. Patterns. March, 1969. Practical Paper No. 15.

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Rice, Molly M. Procedures for Teaching the Alphabet. January, 1969. Practical Paper No. 16.

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Ayers, Jerry B., and George E. Mason. Differential Effects of *Science: A Process Approach* upon Change in *Metropolitan Readiness Test* Scores among Kindergarten Children. *The Reading Teacher*, February, 1969, Vol. II, No. 5. Reprint No. 5.

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Grossman, Marvin. Perceptual Style, Creativity, and Various Drawing Abilities. June, 1969. Preprint No. 17.

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Zeitler, W. R. Preprimary School Science, DESP Quarterly, 1969, Vol. V, No. 3. May, 1969. Reprint No. 8.

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Akridge, Robert L., and Paul L. Wood. Convergent and Discriminant Validation of Teacher, Peer, and Self-Rating Measures of Interpersonal Response Types. February, 1969. Research Paper No. 2.

Akridge, Robert L., and Paul L. Wood. A Measure of Interpersonal Response Style for Children. February, 1969. Research Paper No. 1.

Carey, Russell L., and Leslie P. Steffe. An Analysis of the Effects of Selected Experiences on the Ability of Preschool Children to Use Conservation of Length and Conservation Relations. April, 1969. Research Paper No. 6.

Carey, Russell L., and Leslie P. Steffe. An Analysis of the Effects of Selected Experiences on the Ability of Preschool Children to Use the Transitive Property. April, 1969. Research Paper No. 5.

Carey, Russell L., and Leslie P. Steffe. A Study of the Interrelationships of Conservation of Length Relations, Conservations of Length, and Transitivity of Length Relations at the Age of Four and Five Years. April, 1969. Research Paper No. 4.

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Goolsby, Thomas M., Jr. Evaluation of Cognitive Development--An Observational Technique Pre-Reading Skills. June, 1969. Research Paper No. 10.

Grossman, Marvin, and Robert Kent. Increasing Children's Abilities to Handle Visual Information through Early Cognitive Stimulation. April, 1969. Research Paper No. 3.

Hooten, Joseph R. A Survey of Some Conditions Relevant to the Teaching of Mathematics in the Elementary Schools of the State of Georgia. December, 1968. Research Paper No. 12.

Kingston, Albert J., Wendell W. Weaver, and A. C. Bickley. Relationship Between Oral Language and Reading Using Cloze and Multiple-Choice Tasks. January, 1969. Research Paper No. 9.

Technical Papers:

Allen, Jerry C. Visual Perception and Oral Language Production. April, 1969. Technical Paper No. 2.

Blake, Kathryn A., and Charlotte L. Williams. Use of English Morphemes by Retarded, Normal, and Superior Children Equated for CA. December, 1968. Technical Paper No. 3.

Carey, Russell L., and Leslie P. Steffe. A Study of the Effects of Selected Experiences on the Ability of Four- and Five-Year-Old Children to Make Length Comparisons, Conserve Length, Conserve Length Relations Involving Properties and Longical Consequences, and Use Transivity of Length Relations. January, 1969. Technical Paper No. 6.

Gabrielsen, B. W., J. L. Wood, and Charles D. Smock. Psychological Effects of Accelerations of Complex Motor Skills. March, 1969. Technical Paper No. 5.

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Turknett, C., Paul E. Kelly, and Karl King. The Sociology of Early Childhood Education: A Review of Literature. June, 1969. Technical Paper No. 1.

## PROGRAM-PROJECT REGISTER*

June 30, 1969

Research and Development Center in Educational Stimulation

BR No. 5-0250

| Code Number | Title | Coordinator |
|---|---|---|
| 01 | ADMINISTRATIVE PROGRAM | Eugene M. Boyce |
| 02 | SUBSTANTIVE PROGRAM | Everett T. Keach |
| 02-01 | Art Project | Robert B. Kent |
| 02-02 | Language Arts and Verbal Learning Project | George E. Mason |
| 02-03 | Mathematics Project | William D. McKillip |
| 02-04 | Music Project | Gene M. Simons |
| 02-05 | Physical Education Project | Billy E. Gober |
| 02-06 | Science Project | Kenneth S. Ricker |
| 02-07 | Social Science Project | Everett T. Keach |
| 03 | DEVELOPMENTAL PSYCHOLOGY PROGRAM | Charles D. Smock |
| 04 | EVALUATION PROGRAM | Thomas M. Goolsby |
| 05 | TECHNICAL SUPPORT PROGRAM | Eugene M. Boyce |
| 05-01 | Statistical Services Project | Billy G. Smith |
| 05-02 | Publications Project | Margaret B. Sullivan |
| 05-03 | Dissemination Project | Sarah A. Duncan |
| 05-04 | Field Centers Project | Irvin H. Cole |

* Taxonomy Codes and other related information are presently being revised.

# INDEX

Administrative Program, 1
Advisory Panel, 60
Art, 6
Bibliography, 61
Developmental Psychology, 20
Dissemination, 34
Evaluation, 28
Field Centers, 36
Follow Through, 39
Historical Summary, 40
Language Arts and Verbal Learning, 8
Mathematics, 10
Music, 12
Organizational Chart, 46
Papers Prepared during FY 69, 79
Personnel Resumes, 47
  Aaron, Robert L., 47
  Ainsworth, Stanley H., 47
  Boyce, Eugene M., 48
  Cole, Irvin H., 49
  Duncan, Sarah A., 50
  Findley, Warren G., 51
  Gober, Billy E., 52
  Goolsby, Thomas M., Jr., 53
  Keach, Everett T., 53
  Kent, Robert B., 54
  Mason, George E., 54
  McKillip, William D., 55
  Ricker, Kenneth S., 56
  Simons, Gene M., 56
  Smith, Billy G., 57
  Smock, Charles D., 58
  Sullivan, Margaret Brett, 58
Physical Education, 14
Program and Project Register, 84
Publications, 32
R & D Centers Program, ii
Science, 16
Social Science, 18
Statistical Services, 31
Substantive Programs, 5
Technical Support, 31

Appendix VII

## DISTRIBUTION OF THE REPORT

U. S. Office of Education

R & D Centers

Regional Educational Laboratories

National Laboratory on Early Childhood Education

ERIC System

National Advisory Panel of the Georgia
R & D Center

Local Advisory Board of the Georgia
R & D Center